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TRANSMITTAL FORM

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Application Number	10/792,191
Filing Date	March 3, 2004
First Named Inventor	Chun-Ying Huang
Art Unit	1618
Examiner Name	Dameron Levest Jones
Attorney Docket Number	0624-040488

Total Number of Pages in This Submission

ENCLOSURES (Check all that apply)

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Reply/Amendment
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Documents
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawings
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- ☐ Petition for Extension of Time
- ☐ Petition to Convert to a Provisional Application
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Election with Traverse; Return Receipt Postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Patricia A. Olosky Registration No. 53,411
Signature	Patricia Olosky
Date	February 12, 2007

CERTIFICATE OF TRANSMISSION/MAILING

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Typed or printed name	Judy Eberle		
Signature	Judy Eberle	Date	February 12, 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	10/792,191
Applicant	:	Chun-Ying Huang et al
Filed	:	March 3, 2004
Title	:	RADIOACTIVE ARSENIC-CONTAINING COMPOUNDS AND THEIR USES IN THE TREATMENT OF TUMORS
Art Unit	:	1618
Examiner	:	Dameron Levest Jones
Confirmation No.	:	4926
Customer No.	:	28289

MAIL STOP AMENDMENT
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

ELECTION WITH TRAVERSE

Sir:

The present communication is submitted in response to the Office Action in the form of a Restriction Requirement dated January 11, 2007 in connection with the above-referenced application. In view of the following remarks, reconsideration of the Restriction Requirement is respectfully requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Mail Stop: Amendment; Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date below.

Judy Eberle
(Name of Person Mailing Paper)

Judy Eberle 02/12/07
Signature Date

In the Office Action, claims 1-17 have been restricted under 35 U.S.C. §121 between the following allegedly distinct Groups:

Group I, including claims 1-5 and 10-17 that are drawn to a pharmaceutical composition comprising a radioactive arsenic-containing compound selected from the group consisting of As_2O_3, As_2S_3, As_2S_2 and combinations thereof; and

Group II, including claims 6-9 that are drawn to a process of preparing a pharmaceutical composition of Group I.

Further, the Examiner has required election of a single species for prosecution under 35 U.S.C. §121 between the following allegedly distinct Species:

Species I. As_2O_3;

Species II. As_2S_3; and

Species III. As_2S_2.

Finally, the Examiner has required that the tumor or cancer of interest be identified.

The present invention is directed to a pharmaceutical composition comprising a radioactive arsenic-containing compound selected from the group consisting of As_2O_3, As_2S_3, As_2S_2 and combinations thereof, as well as a process for preparing the same. Group I is directed to the pharmaceutical composition of the present invention and the claims of this Group are classified in class 424, subclass 1.61. Group II is directed to the process of preparing the pharmaceutical composition and the claims of this Group are classified in class 424, subclass 1.11.

Applicants respectfully traverse the restriction of Groups I and II on the grounds that Applicants believe a search with respect to Group I would be co-extensive with a search directed toward Group II and, therefore, would not pose an undue burden on the Examiner. However, should the Examiner maintain the restriction requirement as to Groups I and II, Applicants provisionally elect Group I for initial examination.

With respect to the election of either As_2O_3, As_2S_3, or As_2S_2 as the Species of the invention for initial examination, Applicants respectfully assert the following:

Referring to the statements set forth on page 2, line 23 to page 3, line 6 of the present specification, arsenic trioxide (As_2O_3) achieved a complete remission rate of 90% in

the treatment of relapsed acute promyelocytic leukemia (Shen Z.X. et al., Blood (1997), 89: 3354), and other arsenic-containing substances such as "Composite Indigo Naturalis Tablets" and pure tetraarsenic tetrasulfide (As_4S_4) can achieve complete remission rates of 98% and 84.9%, respectively.

In view of the aforesaid, evidently, As_2O_3, As_2S_3 and As_2S_2 each are effective in the treatment of promyelocytic leukemia. According to the present invention, the As atom contained therein can be converted to a radioactive arsenic isotope via a neutron irradiation treatment. Given this, these three compounds should not be deemed patentably distinct Species.

In addition, it is described on page 4, lines 4-13 that "In 2002, Miller et al., propounding the possible mechanisms of actions of arsenic trioxide in *Cancer Research* (2002), 62:3893-3903, stated that these actions might result in the induction of apoptosis, the inhibition of growth and angiogenesis, and the promotion of differentiation, and that because arsenic affected so many cellular and physiological pathways, a wide variety of malignancies, including both hematologic cancer and solid tumors derived from several tissue types, might be susceptible to therapy with arsenic trioxide." Apparently, the therapeutic effect of As_2O_3, in the treatment of cancer is attributed to the As atom contained therein. Since As_2O_3, As_2S_3 and As_2S_2 each contain an As atom, which can be converted to a radioactive arsenic isotope according to the presently claimed invention, the three compounds should not be deemed patentably distinct Species.

Further, the claims of the present invention are directed to a composition containing at least one of As_2O_3, As_2S_3, and As_2S_2 and a process for preparing the same. As such, examination of one of the species would be co-extensive with the examination of the other species identified by the Examiner because the species can exist in the composition concurrently. Accordingly, restriction of the claims between the above-referenced, allegedly distinct species is inappropriate. However, should the Examiner maintain the restriction requirement as to the following Species: As_2O_3, As_2S_3, or As_2S_2, Applicants provisionally elect As_2O_3 encompassed by all of pending claims 1-17, and claims 1-5 and 10-17 of Group I, as the Species for initial examination.

With respect to identifying the tumor or cancer of interest, Applicants respectfully assert the following:

It is described on page 4, lines 4-13 that "In 2002, Miller et al., propounding the possible mechanisms of actions of arsenic trioxide in *Cancer Research* (2002), 62:3893-3903, stated that these actions might result in the induction of apoptosis, the inhibition of growth and angiogenesis, and the promotion of differentiation, and that because arsenic affected so many cellular and physiological pathways, a wide variety of malignancies, including both hematologic cancer and solid tumors derived from several tissue types, might be susceptible to therapy with arsenic trioxide." These statements clearly reveal the fact that arsenic is effective in the treatment of both hematologic cancer and solid tumors derived from several tissue types, rather than liver cancer only.

In addition, referring to the paragraph bridging pages 4 and 5 of the specification, it is clear that arsenic trioxide can inhibit growth of many cancer cell lines and promote apoptosis in the cancer cell lines. Besides, clinical trials of arsenic trioxide were conducted in connection with hematologic malignancies (including acute promyelocytic leukemia, acute myeloid leukemia (AML), acute lymphocytic leukemia, chronic myelogenous leukemia (CML), non-Hodgkin's lymphoma, Hodgkin's lymphoma, chronic lymphocytic leukemia, myelodysplastic syndrome and multiple myeloma), and solid tumors (including prostate cancer, cervical cancer and bladder cancer)(See *Murgo A.J., The Oncologist (2001), 6 (suppl 2):22-28*).

It is further stated in the paragraph bridging pages 5 and 6 of the specification that "WO 99/24029 (corresponding to CN 1285743A) discloses methods for the treatment of leukemia, lymphoma, and solid tumors, which includes administering to a patient a therapeutically effective amount of arsenic trioxide or an organic arsenical". In fact, WO 99/24029 also discloses other therapeutic methods and combination therapies, such as chemotherapeutics, radioprotectants, radiotherapeutics, and the like, so as to improve the life quality of cancer patients.

In view of the aforesaid, the use of arsenic compounds in the treatment of cancers is not limited to specific types of cancers/tumors. Therefore, it is believed that the radioactive arsenic-containing compound according to this invention can be used in the treatment of a variety of cancers as enumerated above. However, should the Examiner require the identification of the tumor or cancer of interest, Applicants provisionally identify liver tumors as the subject matter of interest.

For the Examiner's convenience, the following Table identifies the location in the present specification of the statements relied upon in the foregoing arguments:

TABLE

Location in the Specification	Cancer/ tumor	Reference
p.2, L23 – L27	acute promyelocytic leukemia	*Shen Z.X. et al., Blood (1997), 89: 3354*
p.2, L27 – p.3, L6	acute promyelocytic leukemia	*Wang Z.Y., Cancer Chemother Pharmacol (2001), 48 (suppl 1): S72-S76*
p.3, L7 – L14	acute promyelocytic leukemia	*Shen Y, et al., Leukemia (2001), 15: 735-741*
p.3, L7 – L14	acute promyelocytic leukemia	*Muto A et al., Leukemia (2001), 15(8): 1176-1184*
p.4, L4 – L13	hematologic cancer and solid tumors derived from several tissue types	*Cancer Research* (2002), 62:3893-3903
p.4, L14 – p.5, L2	hematologic malignancies (acute promyelocytic leukemia, acute myeloid leukemia (AML), acute lymphocytic leukemia, chronic myelogenous leukemia (CML), non-Hodgkin's lymphoma, Hodgkin's lymphoma, chronic lymphocytic leukemia, myelodysplastic syndrome and multiple myeloma) and solid tumors(prostate cancer, cervical cancer and bladder cancer)	*Murgo A.J., The Oncologist (2001), 6 (suppl 2):22-28*
p.5, L18 – L20	liver tumor (mice)	*Lin et al., "Study on Anti-tumor Activity of Arsenic Trioxide," China Journal of Chinese Materia Medica (1999), 24(3): 1-3*
p.5, L21 – L25	leukemia, lymphoma, and solid tumors	WO 99/24029 (corresponding to CN 1285743A)

In view of the above remarks, withdrawal of the restriction requirement is respectfully requested. However, in the event the Examiner maintains the restriction requirement, Applicants hereby provisionally elect, with traverse, to prosecute Group I, Species As_2O_3 that corresponds to claims 1-5 and 10-17 of Group I and liver tumors as the subject matter of interest. Applicants make this election without prejudice to the later filing of a divisional application directed to the non-elected claims.

Respectfully submitted,

THE WEBB LAW FIRM

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